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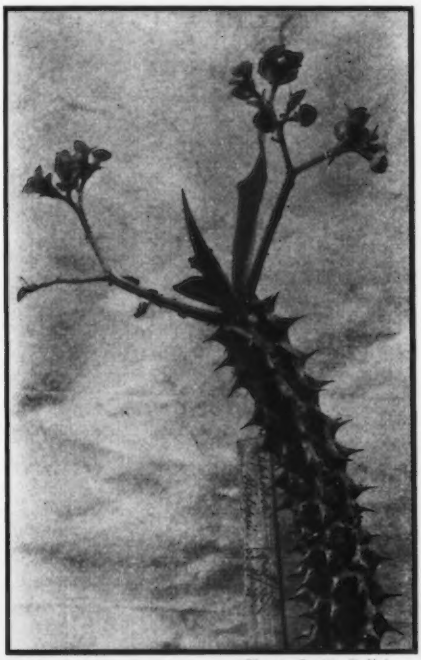

Photo, R. H. Pulleine
Euphorbia hislopii N. E. Br. x.5

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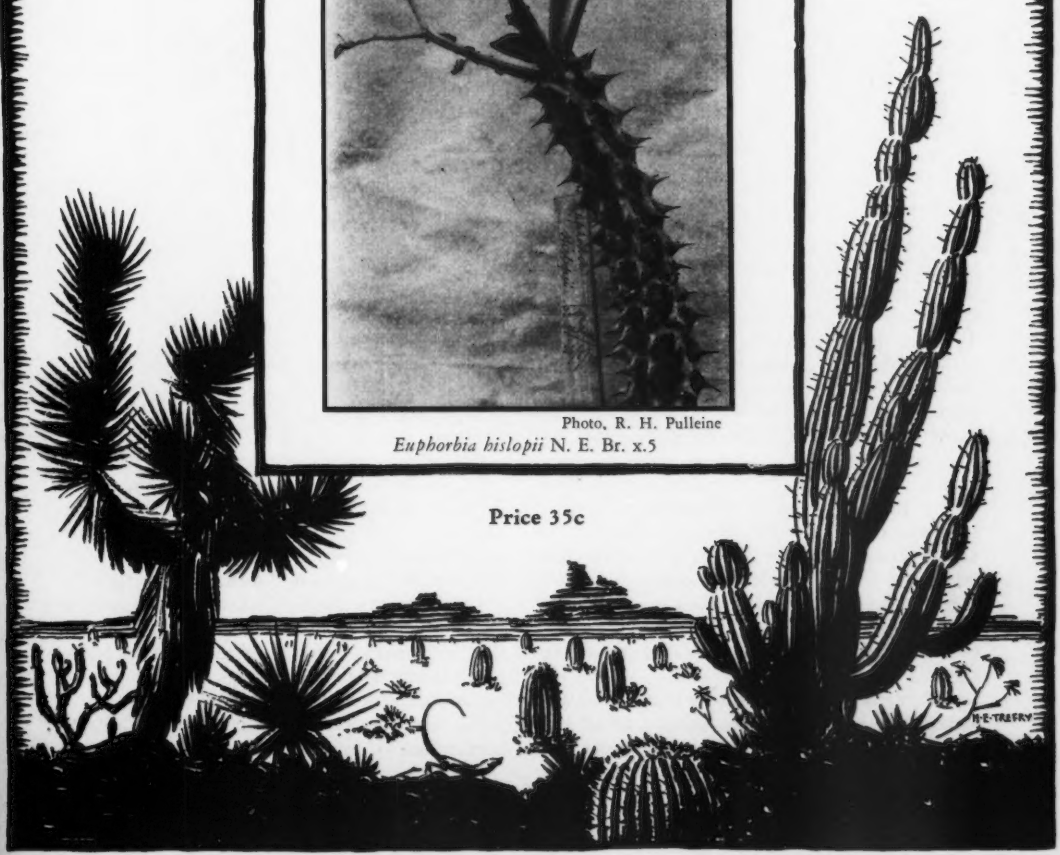

CACTUS AND SUCCULENT JOURNAL

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THE CACTUS AND SUCCULENT SOCIETY OF AMERICA

A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. "The Cactaceae," by N. L. Britton and J. N. Rose, has been adopted by this journal for purposes of identification. (Membership and subscription $3.00 per year, foreign $3.00 per year.) Mail membership application and subscription to the Secretary, Margaret Kincher, 1421 Dominion Avenue, Pasadena, California.

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Euphorbia hislopii N. E. Br.

By G. A. FRICK

Euphorbia hislopii N. E. Br., is a species closely allied and somewhat similar to *E. bojeri* and that popularly known plant *E. splendens,* commonly known as the "Crown of Thorns." It is easily distinguished from these by the stalks which are almost twice as thick, and by the leaves which are sessile and bluntly wedge-shaped at the base, and are not attenuated; another distinguishing characteristic is that the peduncles are shorter than on both *E. bojeri* and *E. splendens,* and range from two to three inches long. The most outstanding difference is in the beautiful pink flowers, which are set at the terminals of the forked peduncles. The peduncles are coated with a poisonous substance attractive to insect visitors which destroys them. On the lower peduncle of the photograph shown on page 173, the dead insects can be seen.

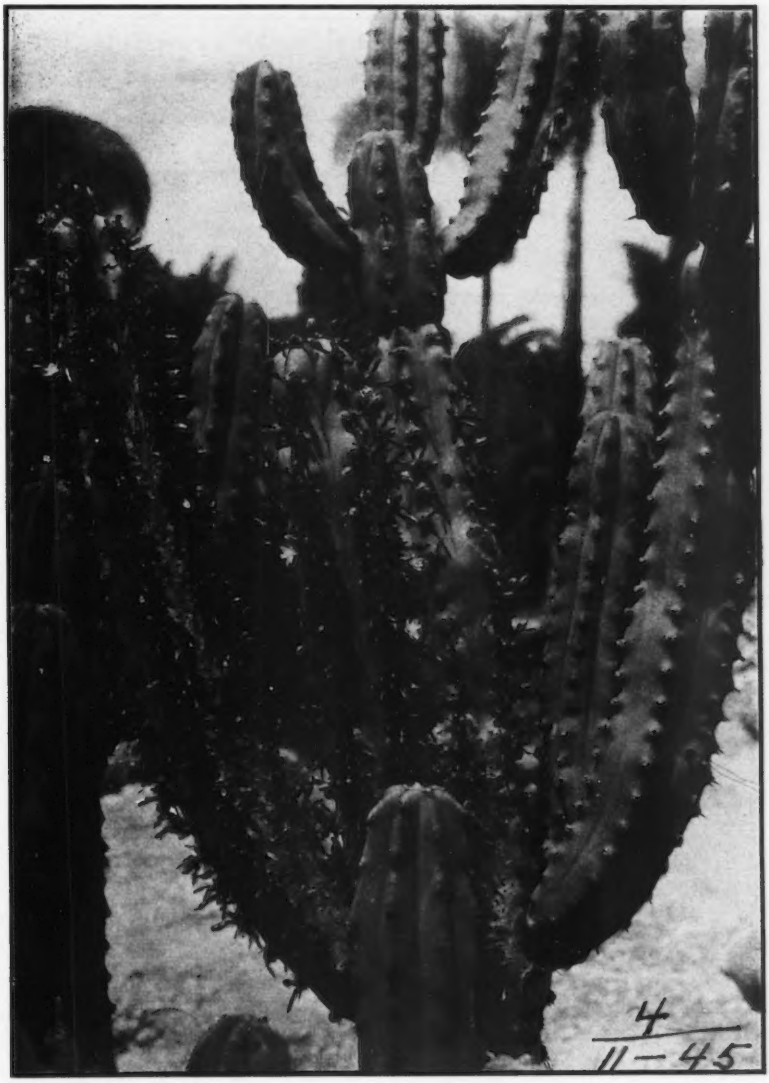
The main stalk of *E. hislopii* is succulent and very spiny, 1½ to 2 inches thick, 8 to 10 corners or angles turning an olive gray with age. The spines are ½ to 1 inch long, brown, and have a wedge-shaped base.

It is generally known that *E. splendens* and *E. bojeri* flower nine to eleven months of the year. The flowers are somewhat smaller on the latter but both have the same shade of red. Whether *E. hislopii* is as consistent a bloomer as its sister plants I have been unable to determine.

The plant was named after Mr. A. Hislop in 1911, when he presented a cutting to the Royal Botanic Gardens at Kew. This cutting came originally from the Botanic Gardens at Durban and it was from plants grown from this cutting that Mr. N. E. Brown determined the species.

Its origin is unknown but very probably it is native to Madagascar or the neighboring islands, since all the other species of the SPLENDENTES group come from there. R. H. Pulleine of South Australia says of *E. hislopii,* "I think it is the very rarest and most beautiful of all the Euphorbias."

Fourth Annual Cactus and Succulent Show



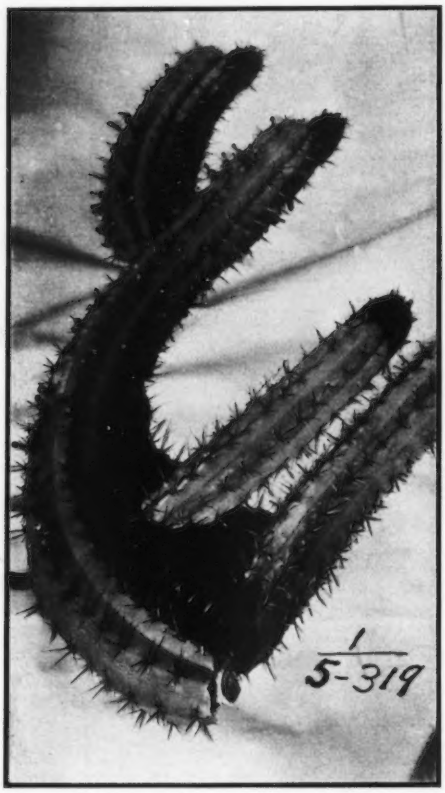
Notes on Genus *Myrtillocactus*

By WILLIAM HERTRICH

The following descriptions and observations of the various species of the genus *Myrtillocactus,* photos of which are represented here, have been made from plants under cultivation at the Huntington Botanic Gardens, for about twenty years. There is no doubt but that in their native habitat, at least some of the species of this genus, like a good many other genera, are influenced somewhat as to the length of their spines, thickness of ribs, the distance between areoles and also to a slight degree the thickness of limb, by geographical location, type of soil and amount of seasonal rainfall. The differences of the various characteristics in some of the species,

Auditorium in Pasadena, May 12, 13, 14

due to natural environment, have led many to believe that the number of species described in various works should be reduced to something like half. However, experiments and observations, made at the Huntington Botanic Gardens over a long period of years, have proven that there are really five distinct species of this genus. For the time being I shall classify them by numbers only as photos will indicate. Further research work is necessary to place some of them into their proper status.



DESCRIPTION OF MYRTILLOCACTUS $\frac{1}{5\text{-}319}$

Habit of plant is to spread rather than grow upright.

JOINTS, from 30 cm. to 1 meter long; about 10 cm. in diameter; practically all of them pronouncedly curved; young growth slightly tinged with blue; old growth dark green; trunk dark grey and scaly.

RIBS, 7 to 8, mostly 8; distance between ribs about 3 cm. Height of rib about 1 cm. on young growth, flattening to ½ cm. on older growth. Ribs, acute and grooves very pronounced and sharp in young growth.

AREOLES on young growth 10 mm. long by 7 mm. wide and from 2½ to 3 cm. apart; on older growth 7 mm. long and 5 mm. wide. When young covered solidly with white felt exposing bulbous portion of spines. Felt completely disappears on old areoles, except the upper end when flowers appear. Spines completely filling areoles.

RADIAL SPINES from 5 to 7, mostly 5; ranging from 5 to 17 mm. in length, sometimes a little longer. When 5 radial spines are present the upper one is the longest; however, when 7 are present, two shorter ones appear above the upper long one. Most of the spines on young growth are nearly at right angles to the central spine, while on old growth many of them are at a lesser angle, occasionally the two upper ones are nearly upright.

CENTRAL SPINE 2½ to 3 cm. long, sometimes considerably longer; straight, greatest width at base; dagger shaped, all spines are flattened laterally. Spines in this species seem to be the same length on young and old growth. All spines on new areoles are reddish brown at base, balance being black and gray, developing later into bulbose black bases with gray top, and on the oldest growth the entire spine arrangement has grayish color.

FLOWERS about 3 cm. in diameter appear on the upper part of the areoles. Buds including tube about 3 cm. long. Outer perianth segments tinged with brown, inner ones greenish. Thirteen or fourteen segments in all, about 15 mm. long. Filaments are white. Style greenish white with 5 lobes about the height of the stamens. Flowers stay open in the forenoon.

FRUIT ellipsoid to subglobose; 1 to 2 cm. long, 1 cm. wide at its widest part; pointed at base; dark green in color with many grayish spots scattered uniformly over the entire surface, also about half a dozen minute areoles covered with felt out of which protrudes a single black spine about ½ mm. long. Fruit turns reddish purple when ripe, and appears usually single but often in pairs or in threes.

SEED is black and pitted, 1½ mm. by 1 mm.

DESCRIPTION OF MYRTILLOCACTUS $\frac{2}{16\text{-}1}$

JOINTS from 20 to 50 cm. long, about 9 cm. in diameter; dark green with a decided blue cast on new growth which can readily be wiped off; stem and older joints dark gray and scaly. Habit of this plant is to spread rather than grow upright.

RIBS mostly 6, seldom 5 or 7; about 4 cm. apart. Ribs 1 cm. high in young growth, 5 mm. in mature growth. Both grooves and ribs are sharply defined, especially in the young growth.

AREOLES from 4 to 5 cm. apart; oblong, 6 to 9 mm. long by about 6 mm. broad; white felt only noticeable on areoles of young growth, disappearing entirely afterwards. Young areoles have a red margin about 2 mm. wide.

RADIAL SPINES from 3 to 5, generally 3 on young growth but sometimes 4 or 5; length from 5 to 10 mm. On older joints all spines are slightly longer. When 3 are present the 2 upper ones are the longest of the 3. When 4 or 5 are present the upper and lower ones are the shortest.

CENTRAL SPINE from 15 to 25 mm. long, sometimes longer; slightly curved downward. Spines on old growth have decided ring marks on close examination. Youngest spines when first protruding out of the areoles are reddish brown at base. Decidedly four ribbed on the lower half, flattening out two-sided to a sharp point.

FLOWERS 2 cm. across the top; tube covered with short bracts ending in red point; twice as long

as fruit base; outer perianth segments reddish brown on the outside; inner perianth segments greenish on the outside, white on the inside. Filaments are white; style is white with greenish tinge toward base; 5 white lobes same height as stamens.

FRUIT globular; on top of areoles, mostly single, but sometimes in pairs and in threes. 12 to 15 mm. in

diameter, having from 3 to 5 very small areoles, covered with felt, scattered over the surface with a single black pointed spine protruding. Color of fruit, dark green turning to purple when mature.

SEED slightly kidney shaped, black and pitted, 1 mm. long and little less broad.

DESCRIPTION OF MYRTILLOCACTUS $\frac{3}{13\text{-}47}$

JOINTS 15 to 30 cm. long; 5 to 7 cm. in diameter. Changes color from a light green in young growth to grayish brown on old growth. All joints are curved and the habit of the plant is to spread rather than grow upright.

RIBS 5 to 6, mostly 5; 3 to 4 cm. apart; 5 to 7 mm. high. Both ribs and grooves are sharply defined in young growth, flattening out considerably in older growth, retaining distinct groove line. Color, light green, sometimes a little yellowish green; hardly any grayish or bluish tinge on young growth. Some ribs when expanding on top show occasionally violet shading.

AREOLES 3 to 3½ cm. apart; sitting depressed in the ribs; when young covered with nearly white felt surrounded with a violet purple ring 1 mm. wide. Felt nearly disappears when older, but appears again on top of the flowering areoles.

RADIAL SPINES 3, 2 to 5 mm. long; lower one the stoutest and decidedly bulbous at base, other 2 only very slightly. When first appearing in the areole, spines are black with light gray spots, sometimes reddish brown.

CENTRAL SPINE when present 12 to 15 mm. long, but rarely present, sometimes on old growth up to 25 mm. long, three-angled.

FLOWERS including tube and ovary 23 mm. long. Tube very short. Outside perianth segments brownish, inside perianth segments greenish white.

FRUIT nearly globular, 6 to 10 mm. in diameter; appears on top of the areole usually in clusters of from 3 to 8 but sometimes single; light green, having from 1 to 3 areoles covered with felt with single small

spine protruding about 1 mm. in length. When ripe is wine red in color and bursts open.

SEEDS black and pitted, 2 mm. by 1 mm.

DESCRIPTION OF MYRTILLOCACTUS $\frac{4}{11\text{-}45}$

JOINTS 25 to 80 cm. long, 10 to 20 cm. in diameter. Grooves on the older joints completely filled in; hardly angled at all. Ascending nearly straight in contrast to the three preceding species. Short trunk 30 cm. in diameter, reddish brown with dark gray spots on trunk and old joints; bluish tinge on young growth which readily wipes off. Habit of this plant is to grow upright rather than to spread.

RIBS 6 to 7, 4 to 5 cm. apart, 1 cm. high at the highest point, flattening out to somewhat half. Top of ribs rounded in contrast to the other species of this genus.

AREOLES nearly circular, about 8 mm. long by 7 mm. broad; when young bordered with a purplish ring about 1 mm. wide, surrounding the felt. White felt covers the entire areole on young growth, decreasing later on and changing color to gray. 3 to 5 cm. apart; elevated from 3 to 5 mm., forming a curved rib line between areoles. Light gray felt cushions form on the upper part of the flowering areole on the older

joints, sometimes to great size covering from half to three-fourths of the spines. These felt cushions range from 10 to 20 mm. in diameter, changing color from a light gray when young to dark gray, nearly black, when old.

RADIAL SPINES 5 to 7 in number; 2 to 10 mm. long, seldom longer except on old growth occasionally 15 mm. long. When 5 are present, the two top ones are a little shorter than the two following, while the middle lower one is the shortest of the five. When 7 are present the two top ones are the shortest in the group. Most of the radial spines are at an angle of from 45 to 65 degrees.

CENTRAL SPINE 12 to 15 mm. long, sometimes 25 mm. on old joints; straight and slightly flattened laterally. All of the spines are bulbous at the base; color of the young spines slightly purplish red at the base, black with gray rings or spots for the balance. When old all spines are of a dark gray color.

FLOWERS including tube and ovary are 25 mm. long, 20 to 25 mm. wide; ovary and tube 15 mm. long; bud, reddish brown. Fourteen perianth segments, outer ones reddish brown, inner ones white. Filaments white; style white. Four white stigma lobes with slightly greenish tinge on top, slightly shorter than stamens.

FRUIT very distinct from the other species of this genus. Three to four times as long as its greatest diameter, tapering to a point at the base, 15 to 25 mm. long. Grouped around the extra large areoles. Color, dark green with a brownish tinge on the sunny side. Two or three small areoles covered with felt scattered over the surface from which protrude a single short spine. Color changes to purplish red when fully ripe; number of fruit ranging from 4 to 12 in an areole.

SEED kidney shaped, reddish brown, slightly pitted, 2 mm. long by 1 mm. wide.

DESCRIPTION OF MYRTILLOCACTUS $\frac{5}{3\text{-}12}$

JOINTS ascending practically straight; habit of this plant is to grow upright rather than spread. Diameter 4 to 6 cm. Length of joints 20 to 40 cm. Color of young growth light green, sometimes yellowish green; on older joints and on trunk, reddish brown.

RIBS 5 in number; from 5 to 7 mm. high on young growth, flattening out very quickly, groove nearly eliminated showing only groove line.

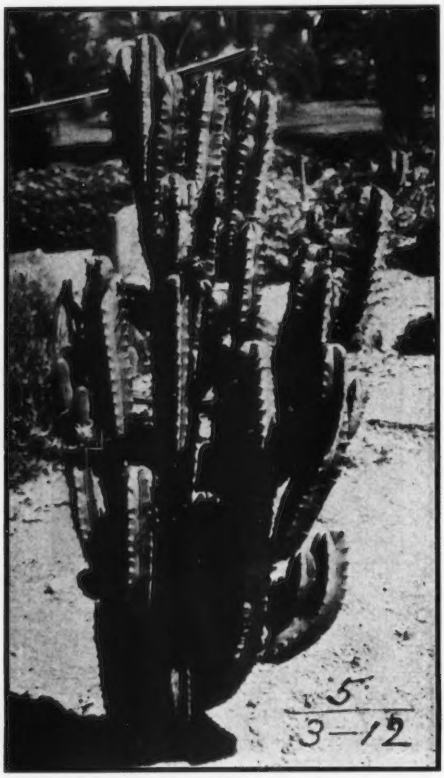
AREOLES 25 mm. apart; very small, practically round. 5 mm. in diameter. Covered with reddish brown felt when first appearing. Felt later turns into grayish white and disappears finally on older growth. Spines completely filling areoles.

RADIAL SPINES 7 in number protrude from young areoles—this number reduced later to 5. Spines protrude at a slight angle in young growth and at right angles on older joints.

CENTRAL SPINES 6 to 10 mm. long, sometimes 20 mm. on older growth; bulbous at base, straight. Color of spines on young growth, dark gray with black point; on older growth entirely dark blackish gray.

FLOWERS appear on the upper part of the areole, about 2 cm. long by 2½ cm. broad. Tube 6 mm. long. Buds nearly 2 cm. long, reddish brown on tip and on exposed side. Fourteen perianth segments, outer ones tipped with purple, inner ones light green. Filaments white; style green; 5 white lobes shorter than the stamens.

FRUIT oblate; 10 to 15 mm. in diameter; dark green, slightly brownish on the sunny side, dark purple when fully ripe. Covered at intervals with small felted areoles out of which protrude minute spines,



sometimes one, other times two and three.

SEED black and pitted. 1½ mm. long, 1 mm. wide.

The native habitat of some of the species is well known and at least one of them is scattered over a large area in Mexico. Any information as to the habitat of the last species would be appreciated.

APPENDIX

While in Mexico I took up the question of identification, distribution, etc., of the above described species with Miss Helia Bravo of the Biological Institute, who is in charge of the Cacti. She informed me at that time that she had made two expeditions to Oaxaca and nearby territory and had discovered what she believed to be a new species of Myrtillocactus which she said she named *Myrtillocactus mixtecensis* in a letter to me under date of Jan. 25, 1932.

On my return from Mexico I sent her material of the five different species of Myrtillocactus as described herewith, as well as a copy of the article as published in the current issue of the JOURNAL, giving full descriptions of the various species. In reply she informed me that 4/11-45 is the same plant she visited twice—first in 1930 and then again in September of 1931 to see it in bloom, and which she mentioned as *M. mixtecensis* in her first letter. However, she evidently changed her mind, for in a letter dated February 9th she named the plant M. *"grandiareolatus"* on account of the large flowering areoles which makes this species so distinct from the others.

Number 1/5-319 which no doubt is *M. geometrizans* has the greatest distribution of any of the species, as it is found all over the Mexican plateau, sections of Sonora and in Lower California. —W. H.

California Cacti

Echinocactus polycephalus, Engelm. & Bigel.

By E. M. BAXTER

A barrel cactus with a couple of dozen heads! That is what we have here in Southern California in *Echinocactus polycephalus*. Not very often is it found in collections, though, for it grows off the beaten track and when transplanted generally dries up and dies within a few months' time.

This clustered barrel cactus may be found in many parts of the hills and mountains of the deserts East of Cajon Pass, in San Bernardino, Riverside, and Imperial Counties. I have found it not far out of Victorville to the East. It grows close to the highway between Victorville and Barstow, some of these photographs having been taken less than a half-mile from Helendale. Near Daggett the plants may occasionally be seen from the road. In the Ord Mountain territory South of Daggett it may be seen at all times. Further South in the Colorado Desert area it may be seen in the lower mountains south of the Mecca-Blythe road and north through the passes into the Mojave Desert. Along the Colorado River it extends as an occasional specimen in the mountains and in the great washes of the river's floods.

It is not as common in the Colorado Desert area as in the Mojave. Probably the heaviest concentration is in the Ord Mountain region South of Daggett. Along the Colorado River it has another barrel cactus companion, *Ferocactus rostii*, but elsewhere in its range is the only one of this type to be found.

Photo by Baxter

FIG. 1. *Echinocactus polycephalus showing the single-headed form. Photograph taken 7 miles south of Daggett, California.*

Photo by Baxter

FIG. 2. *Echinocactus polycephalus showing the clustered form. Photograph taken at the same time and place as No. 1.*

Echinocactus is differentiated from *Ferocactus* by the fruits which are heavily covered with wool or felt. In this species the fruits are completely hidden by a 1/4-inch thick covering of white felt. The flower is yellow, the petals short, and few in number. There are some scales on the ovary that end in a hard point leading a person to believe that they are spines sticking through the felt. The crown of each head is a mass of white from which new spines protrude as they begin to grow. The spines are red, flattened, and straight.

Occasionally groups of specimens are found that have grown into a single large head. Intermediate plants are also to be found near these, some with a group of small heads at the base or near the middle, some with the central head only slightly larger than the rest of the cluster. When single, the stem is sometimes as large as three feet high and a foot in diameter. Ordi-

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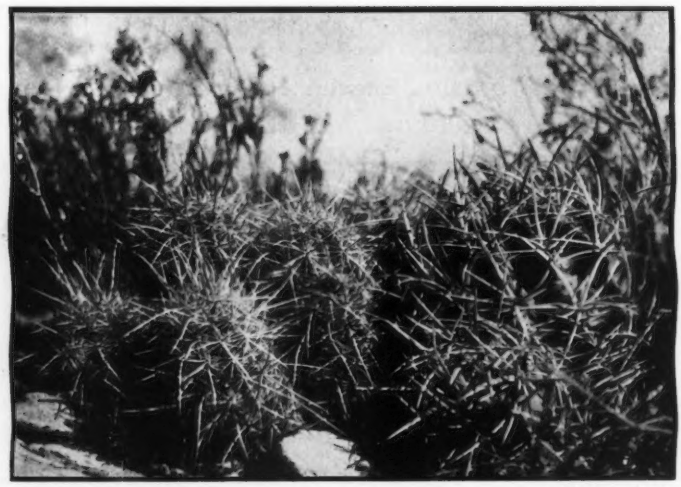


Photo by Baxter

FIG. 3. *Echinocereus engelmanni and Echinocactus polycephalus, a natural group photographed between Victorville and Ord Mountain, California.*

narily each head of a cluster is round and about ten inches through.

I once found a crested plant with an enormous central head crested for two and a half running feet. Several small heads of normal form were in the cluster.

A person who wants to have this species represented in his garden must be satisfied with small, single plants. It is almost impossible to root large specimens; they will dry up before the roots are formed. Small plants may be bought, from homesteaders in the desert, that will root if planted in a decomposed granite soil and kept relatively dry.

An unusual condition of their natural habitat is that they grow more commonly than other cactus on the South slope of hills, fully exposed to the strongest sun.

No practical use is made of the species.

Echinocactus polycephalus Engelm. & Bigel. Proc. Amer. Acad. 3: 276. 1856 (This description copied from Contr. U. S. Nat. Herb. 23, p. 953).

Northern Sonora; reported from Baja, California. Utah and Arizona to California; type from the Mojave River, California.

Solitary when young, in age forming large clumps of 20 to 30 heads, each globular to short cylindric, sometimes as much as 70 cm. high, but usually smaller; ribs 13 to 21, rather stout, 2 to 3 cm. high, somewhat undulate, nearly hidden under the dense spine armament; areoles 10 to 12 mm. in diameter, 1 to 3.5 cm. apart; spines 7 to 15, when young covered with a downy felt but afterwards glabrate, reddish, subulate, more or less flattened, the radials 2.5 to 5 cm. long; central spines 4, stouter than the radials, 3 to 9 cm. long, more or less annulate; flowers yellow, 5 to 6 cm. long; scales on ovary minute, hidden under mass of long wool borne in their axils; scales on flower tube numerous, only a little longer than the wool, chartaceous, pungent; inner perianth segments linear-oblong, 2.5 to 3 cm. long, entire, obtuse; fruit densely woolly, crowned by the somewhat spinescent scales, globose to oblong, dry, 1.5 to 2.5 cm. long, dehiscing by a basal pore; seeds angled, papillose, dull black, 3 to 4 mm. long.

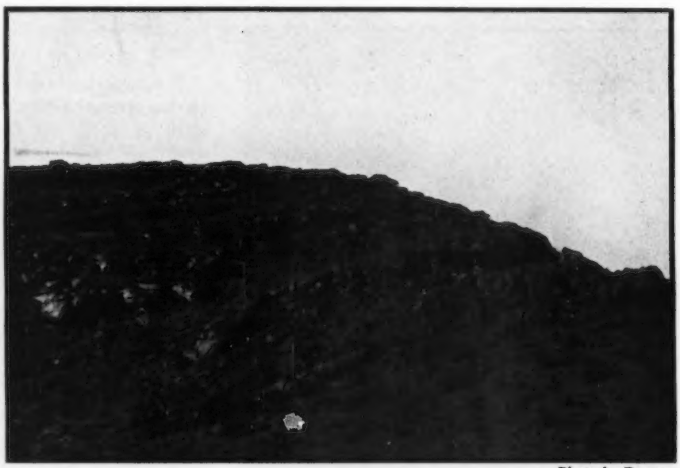


Photo by Baxter

FIG. 4. *The type of landscape where Echinocactus polycephalus is to be found. This hill is 7 miles south of Daggett, California. Photographs 1 and 2 were taken near its summit.*

NOTE: The following 8 pages are the 9th installment from the Britton and Rose reprint of Vol. 1, The Cactaceae.

Notes on Britton and Rose

Edited by E. M. BAXTER

Opuntia tetracantha Toumey

Santa Cruz Wash, Pinal County, Arizona, is given as a collection site of *Opuntia tetracantha* by Mr. A. R. Leding of the U. S. Dept. of Agriculture Acclimatization Station in New Mexico. Mr. Allen Bradshaw of Phoenix, Arizona, sends us a photograph of this species taken in Phoenix Mountain Park. Unfortunately the picture will not reproduce well in print. Mr. Bradshaw has also sent a plant of this species for study, collected between Florence and Tucson, Arizona.

In the key to species of the Series, Britton & Rose give the following: "Flowers orange to scarlet" and in the description give the flower as "greenish purple", and the fruit "yellowish orange to 'scarlet' ". Not having seen *Opuntia recondita,* but considering the facts given, it would be well to alter the key as follows:

Fruit orange to scarlet.... 9. *O. tetracantha*
Fruit greenish-yellow.....10. *O. recondita*

We have another fact reported by Mr. Bradshaw differing from that given by Britton & Rose: He says that the flower is yellow. If this is standard in all plants of the species it will give another key differentiation from *Opuntia recondita.*

Mrs. John D. Wright of Santa Barbara has a plant believed to be *Opuntia recondita.* It has not flowered yet, so positive identification cannot be made.

Opuntia ramosissima

After having devoted much time of the past few years experimenting with and studying *Opuntia ramosissima,* and having intimate contact with it in its native habitat, I have discovered many interesting facts about it that apparently are not generally known.

Many arguments have been waged over the color of the flower. The fact is, the colors in its petals range throughout the rainbow—from green, through yellow, orange, red, brown and into purple. Many different colors appear even on the same plant. The numerous yellow stamens give the flowers a yellow, or greenish-yellow hue, and the petals are so transparent that what color there is to them is rather intangible and difficult to describe. Flowers do not often appear on cultivated plants away from the desert, and many have never seen its flower. This is probably due to the fact that *O. ramosissima* blooms on the desert during the mid-summer heat of late June and July, after all other desert flowers have withered and set fruit and seed pods, and at a time when only the most hopeless desert enthusiasts venture there.

Colorings in the stems themselves vary from bright green to dull olive; others are a deep purple color, while still others are variegated of both green and purple. Some are densely spiny, some are entirely spineless.

Contrary to the general belief, *Opuntia ramosissima* is found to be most responsive to garden care, is very sure to root from cuttings when given the proper conditions, and is one of the most hardy and adaptable of all succulents. The secret of success in rooting from cuttings and also in its general care is an ample supply of warmth, moisture and patience. Cuttings should be made during spring months, and should be taken above the woody portions, preferably at a joint. Root in coarse sand or gravel, keeping warm and moist for several months. After about three or four weeks in warm weather, new roots begin to appear, but should not be disturbed, for young roots will fall off at a touch. Planted in a warm location and in soil composed mostly of coarse gravel or decomposed granite, with good under drainage, it then thrives best with plenty of water in summer, and will withstand considerable winter rainfall, and below zero temperatures. As in other cacti, roots are formed at areoles, at the point at which the single spine and glochids are borne, and it might be added that spineless forms root more readily than the densely spiny ones.

Many are alarmed at the yellow, wax-like substance which often oozes out at the areoles. This is caused by over-watering, but it is often necessary to keep damp to this point to get new roots to start. This appearance may be taken to mean nothing worse than an indication that the sap is flowing through the plant, and soon after it appears on cuttings, new roots are found to be forming. The core of the young stems is composed of a colorless, glutinous substance, and it is this core which oozes out at the areoles. During extended rainy weather, it appears abundantly in a colorless, almost fluid form, afterward turning black. In dry weather it appears yellow in color and soon becomes hard and brittle. This substance should be kept picked off for the appearance of the plant, but using care not to pull out the core of the stem along with it, especially in the cristate forms.

This species seems subject to quite frequent fasciation, and is believed by many to be caused by a worm which often attacks it on the desert, entering by a small hole it bores in the stem, and eating its way through the juicy core. It is true that crests often, though not always, appear on plants which have earlier been attacked by this parasite, but I have never found a crest itself having received injury from this source. Cristate cuttings are found not to be difficult to root, and many successful grafts may be found in local collections—mostly on some Opuntia stock, but one worthy of particular mention that is making beautiful new crested growth is grafted on *Selenicereus macdonaldiae.*

Several crested flowers of *Opuntia ramosissima* were found on a desert trip last summer. They appeared at first to be nothing more than any ordinary cristate joint—flattened, and, the largest, about 7/8 of an inch across, until, unceremoniously, they began to split along the top margin of the crests, and revealed truly cristate flowers,* every organ being definitely crested. The petals and stamens were exceptionally numerous; there was but one style, but it was flattened and spread to nearly half an inch width at the top, resembling much the appearance of the stem of the

* These crested flowers were exhibited at the July 1931 meeting of the Society, held at the Bixby home in Long Beach.

common cristate *Sedum praeltum*. Many stigmalobes appeared on the crest of the style, almost as a rolled edge of the pistil, indented, but not definitely segmented. The ovary was about twice as broad as in a normal flower.

These did not open like a normal flower, but appeared only through the slit at the top, as if it had been a perfectly legitimate crest which "changed its mind" and decided to become a flower!

MRS. M. H. STEELE.

Photo by Eric Walther

Aloe caesia Salm-Dyck; flowering plant at the Huntington Botanic Gardens. At right is shown a single flower-spike; x .25

Notes from Huntington Botanic Gardens

By ERIC WALTHER

No. 4 *Aloe caesia* Salm-Dyck.

Our initial article on the genus *Aloe*, which appeared in these pages (*1) was not intended to be anything more than a first introduction, and by no means attempted finality on a subject scarcely done justice yet anywhere. Since then we have had occasion to touch upon the genus in several other instances, (*2) and on the present one would like to call attention to what seems to us to be a particularly meritorious species, *A. caesia*, the subject of the appended photos. The species in question is by no means a recent introduction, but has been in cultivation in Europe and elsewhere since 1815. In spite of its evident merits it still continues to be rather a rarity in local collections, and we hope that these lines may lead to a better appreciation of what certainly is one of the more worthwhile Aloes. Not only is the plant markedly vigorous, the specimen here pictured, from the collection at the Huntington Botanic Gardens, having reached a height of over 5 feet, but its habit of flowering in late fall and early winter sets it off from most of its congeners. These

* 1: CACTUS JOURNAL Vol. I. 6:1-3; 1929.
* 2: CACTUS JOURNAL, I: 256. 1930; II: 353. 1930.

two peculiarities might well serve to recommend this species to the attention of anyone interested in creating a superior strain of Aloe-hybrids.

Berger places this into his Series No. 26, *Principales,* which may be briefly characterized as follows:

"Plants large, tree-like, with stout stems; leaves soft, ensiform, densely rosulate; bracts large, obtuse; perianth cylindric, rounded at base, segments free; ovary obtuse; filaments more or less exserted." *Aloe caesia* may be distinguished from the other species of this series by the following characters: Inflorescence a simple raceme, to 1 m. tall or more, very dense, bracts numerous, densely imbricated, longer than the evident pedicels, perianth to 38 mm. long, at first reddish, then paler, whitish, segments free, connivent, prominently green-nerved near tip; filaments shortly exserted, yellow; style exserted.

Its closest relative is *Aloe speciosa,* as far as we know not grown here, which becomes a tree to 25 feet tall, and is called by Berger "a most noble plant." *Aloe macroclada* and *A. salm-dyckiana* of the same Series have been mentioned here before. The former differs from *A. caesia* in its strictly sessile, dingy-colored flowers only 20 mm. in length, while *A. salm-dyckiana,* a hybrid between *A. ferox* and *A. arborescens,* may be recognized by its three-branched inflorescence, scarlet perianth and pedicels decidedly longer than their subtending bracts. *A. caesia* was described and pictured in Salm-Dyck's classical "Monographia generum Aloes", No. 17:3, our material agreeing quite well with the cited figure except for such differences as would be due to cultural conditions. In the plant here pictured the trunk is as yet unbranched, the pedicels are as long or slightly longer than the bracts; and the perianth is only 32 mm. in length.

Argyroderma testiculare v. *roseum* N. E. Br. Collection of A. Burns, San Rafael, Calif. Left x 0.75, right x 1.25

Argyroderma testiculare v. *roseum* N. E. Br.

By JAMES WEST

This seems to be the first flowering of any species of *Argyroderma* to be recorded in California. The original of our illustration flowered in July 1931 in the collection of Archibald Burns in San Rafael. It was raised from seed imported from Germany by the present writer some four years ago and given to Mr. Burns, whose well-known skill as a cultivator brought the plant into flower well ahead of any of its brother seedlings.

As will be seen, the flower is of the short, wide-petalled type characteristic of *A. testiculare* in contrast to *A. deLaetii* Maass, the color a fine magenta-crimson of about the shade of *Argeta petrensis* or *Lampranthus conspicuus,* which would entitle it to be classed as var. *roseum,* though this is in reality only a color-form, as seedlings even from the same capsule have been known to vary. The type-color is white or cream, others being yellow (var. *luteum*) and ochreous shot with purple (var. *Pearsonii*):

The light appearance of the flower in the photograph is deceptive, as to the eye the magenta of the petals appears much darker, and in vivid contrast to the greenish-white of the leaves; this in spite of Verichrome film and K 2 filter. The purples so prevalent in the flowers of Mesembs are evidently strongly actinic, so that for correct rendering an orthochromatic plate and appropriate filter are indicated. Otherwise the extraordinary deep crimson of *Lampranthus tenuifolius,* the violet of *L. emarginatus* and the softer rose of *Mes. filicaule* will appear equally and falsely white.

Auditorium in Pasadena, May 12, 13, 14

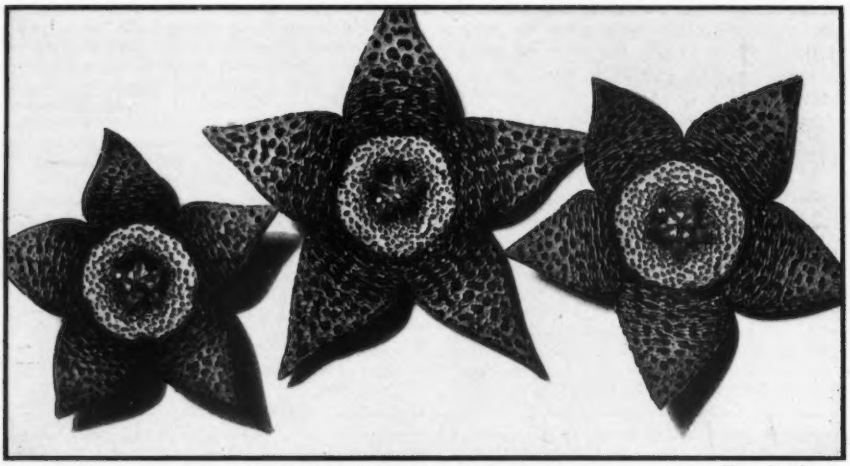


FIG. 41. *Stapelia* flowers from a single parent x .75. Photo by Sloane

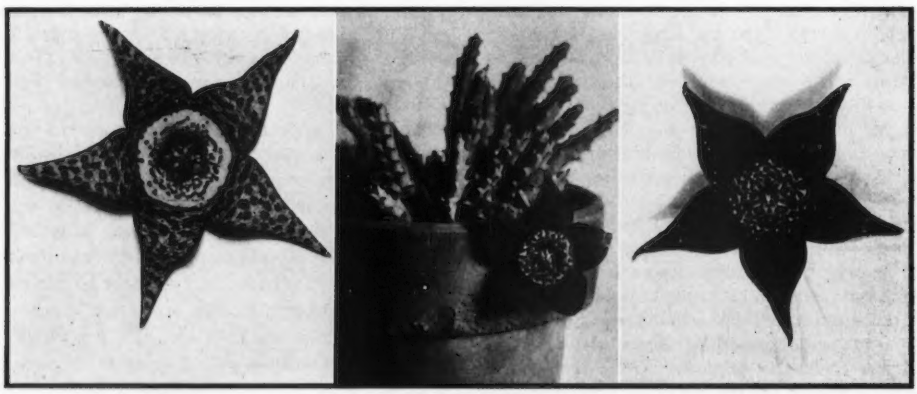
The Stapelieae

9. Stapelia (The *Orbea* Section) *Continued*

By ALAIN WHITE *and* BOYD L. SLOANE

We are brought back constantly to this fact that *Stapelia variegata* is an amazingly variable botanical species. As an example we show in Fig. (41) three flowers from one-year plants grown by the Soldena Gardens in Pasadena from seed of a single parent. With a lens, material distinctions in the markings and in the forms of the corona lobes will be noticeable. If a single generation, without special hybridization, can produce such minor differences, it is no wonder that longer periods of time and more varied sources of hybridization have produced changes almost beyond description.

To study the Variegata hybrids is therefore to erect a mass of data whose value will have passed before the edifice is completed. It is most alluring work. Much material exists at any given moment, and some of the forms, however transient, are very curious and beautiful. To give names to these forms is very pleasant, and one can linger with them splitting botanical hairs to one's heart's content. Of all the students who have toiled in this field, Dr. Rüst stands out as by far the most thorough. He was a member of the Board of Health in Hanover, and devoted the leisure of many



(a) Photo by Sloane (b) Photo by McCabe (c) Photo by Sloane

FIG. 42. Variations of *Stapelia variegata*. (a) Flower has characteristics of *var. retusa*. x .75; (b) Form of *S. lunata* x .5; (c) *S. lunata* x .75.

(a) Photo by Sloane (b) Photo by McCabe (c) Photo by Sloane

FIG. 43. *Stapelia variegata* and two varieties. (a) *var. laeta;* (b) *var. picta;* (c) *S. variegata* (type). All x .75.

years to the *Orbea* hybrids. In the Journal of the German Cactus Society for 1895 he published a key to 86 varieties and hybrids, and later compiled a manuscript "Atlas", illustrating and describing a still greater number. On Rüst's material Berger based the study of the *Orbeas* which he published in his Treatise of 1910, embodying the modifications suggested to him from the additional hybrids he himself had found, principally in the gardens at La Mortola, the wonderful estate of Sir Thomas and Lady Hanbury near San Remo in Italy, of which Berger was the director for so many years.

Today all this material is becoming confused through the development of new hybrids and the disregard of true names to which we have already alluded. The four principal causes of the confusion which has arisen are as follows: (1) Rüst's, Berger's and Brown's names have been carried over to other forms quite distinct through hybridization. (2) Names have been misspelt and the errors perpetuated. Thus, *Stapelia normalis* has been corrupted into a widely used but meaningless name, *S. mermelis,* and *Stapelia uspenskyi* is probably responsible for the puzzling name, *S. nopenackyi.* (3) New names have been concocted and used without any adequate description, so that we meet and are expected to consort with *Stapelia milleri, S. recurvata, S. arvilla,* and a host of other individuals, without any formality of introduction. (4) Names of perfectly good species, not *Orbeas,* have been applied to Variegata hybrids, through lack of recognition, including *Stapelia asterias* Mass., which is a *Stapeltonia,* and *S. caroli-schmidtii* Dntr. and Brgr., which is a synonym from the Miscellaneous groups.

All these incorrect names, and names incorrectly used, are in Latin form, making a parade of botanical accuracy with which dealers, collectors and recent writers alike have considered it sacrilege to interfere. James West has very aptly pointed out that the collecting of all succulents has been from its beginnings more intimately connected with botany than other kinds of horticulture and that very naturally there

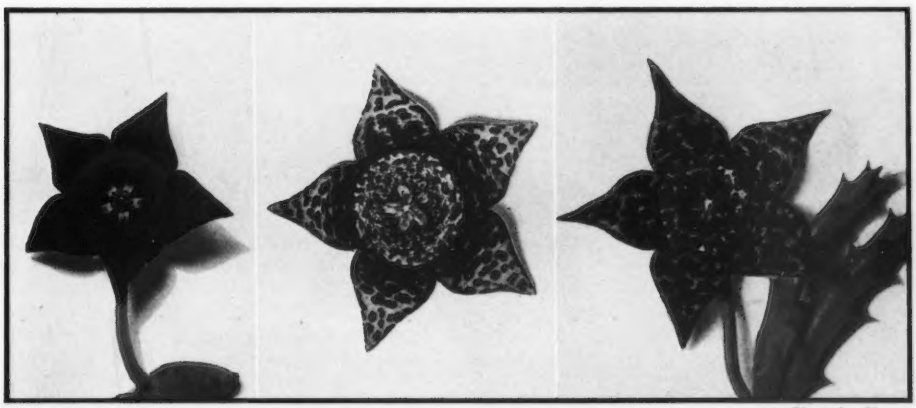


Photo by Sloane

FIG. 44. Varieties of *S. variegata.* (a) *var. atropurpurea;* (b) *var. bufonia;* (c) *var. atrata.* All x .75.

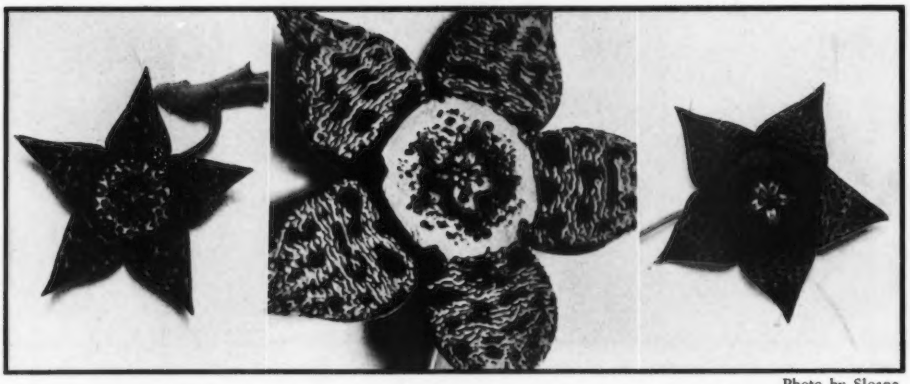


Photo by Sloane

FIG. 45. Hybrid forms or variations of *Stapelia variegata.* Center natural size; right and left x .75.

has resulted a strong tendency to latinize every sort of name, even if it did not deserve the honor. Had we been dealing for instance with roses, instead of with Stapelias, names for the less permanent hybrids would have been given in English, and we would at once realize that we were not dealing with true species.

To summarize the whole situation then we can accept N. E. Brown's 20 varieties as permanent forms from which radiate an indefinite number of less stable varieties and garden hybrids. If we wish to speak accurately of any such minor variety or hybrid, we can say that it belongs in the relationship of one or other of Brown's true varieties. But if we prefer to retain the name we have received from some other source, we must realize that the name is probably little more than an indication and in no sense botanically correct. Indeed, in a recent letter, Mr. Brown said: "There are so many hybrids under all sorts of names; it is a pity the fact cannot be publicly proclaimed and realized." He was referring to the STAPELIEAE in general, but in the case of the *Orbeas* the condition is most grievous of all.

The writers have examined flowers of some forty distinct types of *S. variegata.* Of these six appear to conform to the definitions of N. E. Brown's basic varieties, and we include in this article photographs of each of these. But in only one further case have we found any approach to agreement with the descriptions of minor varieties or hybrids as given by Rüst or Berger. The hybrid we think we have identified is *Stapelia lunata* Dam. ex. Rüst, a member of the relationship of *S. marmorata* N. E. Br. characterized by the distinct markings, in the shape of little crescents, at the end of the corolla lobes, see Fig. (42 b-c) ; but even in this case we have found two distinct forms, neither possessing precisely the outer coronal lobes called for by Berger's description.

(To be continued)

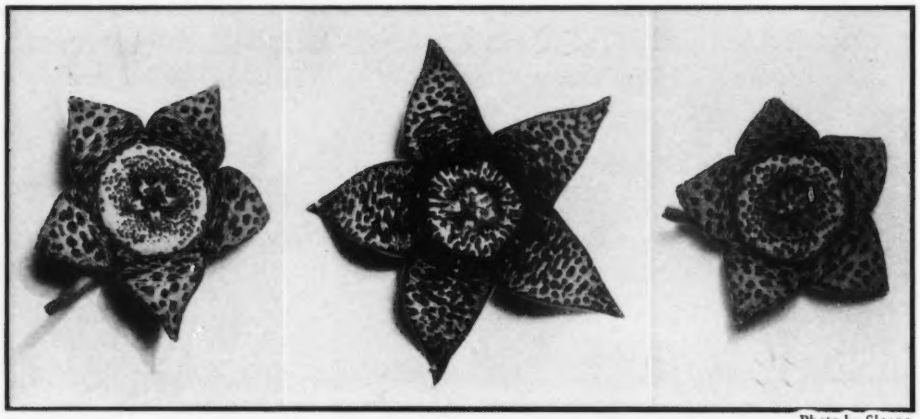
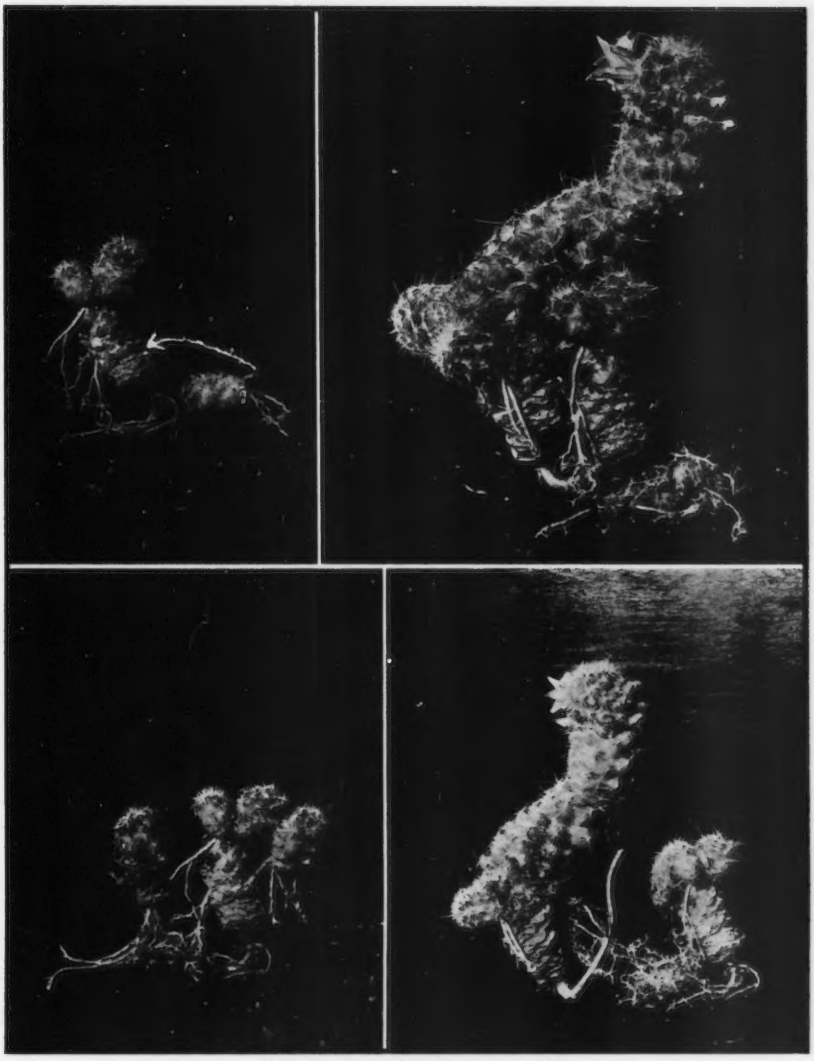


Photo by Sloane

FIG. 46. Hybrid forms or variations of *Stapelia variegata,* x .75.



Neomammillaria fasciculata Engelm.

A Cactus that Reproduces Like the Date Palm

By PALMER STOCKWELL

The small pin cushion cactus, *Neomammillaria fasciculata* Engelm., is considered rare but in reality is quite plentiful in its peculiar habitat along desert wastes and river flood plains of southern Arizona. It grows in dense clusters of from 15 to 150 small plants surrounding 3 or 4 larger plants which are 7 to 10 cm. (3 to 4 inches) tall. When the soil is washed away from a cluster most of the plants are seen to be individuals but a few of the smaller stems are found to be connected to the older plant by a much reduced stolon. An investigation of the smaller plants showed that they originated in the axils of old, corky, tubercles at or slightly below the soil line. It was found that when the small plants had attained a length of 1 cm. (3/8 inch) they sent out one or more small roots. The connection between the young offshoot and

the older plant dies when the young offshoot is 1½ to 2 cm. (¾ inch) long and the small plant is then nourished by its own root system. The reduced stolon or connecting tissue soon disappears and the young plant gives no outward indication of its origin. Older stems often wither down to the ground and the remaining underground portion turns brown and leathery but continues to send out offshoots.

This form of reproduction is rare in the cactus family but resembles that of the date palm which also has a very restricted desert habitat. The perpetuation of the species in a favorable environment is insured by this method. If survival of the species were dependent upon seed dispersal alone the fate of this plant would be questionable because most of the seeds would fall in unsuitable locations. The chance of extinction is reduced by the offshoot method of reproduction.

Dr. Geo. Engelmann* in his letter to Lieut. Col. W. H. Emory says: "I have ventured to describe some of your species from the drawing; my description, however, and the names given by me, must remain doubtful till we are able to obtain some more data to characterize the species." He then described *Mammillaria fasciculata* stating that the habit of growth was similar to that of the Echinocerei in that there were "many from one base." Recent authors have accepted Dr. Engelmann's apparently erroneous interpretation without question but on investigation the plant proved to have an entirely different habit of growth.

*Bot. Works of Engelmann, edited by Trelease & Gray, 1887, Page 109.

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